

FORM PTO-1390
(REV 12-29-99)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

58937/123

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/509147

INTERNATIONAL APPLICATION NO.

PCT/EP98/05901

INTERNATIONAL FILING DATE

17 Sept. 1998 (17.09.98)

PRIORITY DATE CLAIMED

18 Sept. 1997 (18.09.97)

TITLE OF INVENTION

PARALLEL REACTION STATION WITH MAGNETIC STIRRING

APPLICANT(S) FOR DO/EO/US

LADLOW, Mark; MITCHELL, Adrian, Walter

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☒ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:

**Published International Application;
International Preliminary Examination Report;
International Search Report.**

**--copy of Name Change document as filed with European Office
--copy of Certificate of Incorporation on Change of Name
document as filed with European Office**

Express Mail Label No.: EL246278555US Date: March 17, 2000

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office of Address" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner of Patents, Washington, D.C. 20231.

Krisne Simoni
Signature

Form PTO-1390 (REV 12-29-99) page 2 of 2

Applicant or Patentee: Ladlow et al.
Serial or Patent No.: 09/509,147
Filed or Issued: September 17, 1998
For: PARALLEL REACTION STATION WITH MAGNETIC STIRRING

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
37 C.F.R. §§ 1.9(f) & 1.27(c) - SMALL BUSINESS CONCERN

I hereby declare that I am:

- ☒ the owner of the small business concern identified below:
☐ an official of the small business concern empowered to act on behalf of
the concern identified below:

Name of Concern: Radleys Discovery Technologies Limited
Address of Concern: Shire Hill, Saffron Walden, Essex, CB11 3AZ, G.B.

I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 37 C.F.R. 121.3-18, and reproduced in 37 C.F.R. 1.9(d), for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time, or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either directly or indirectly one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled: Parallel Reaction Station with Magnetic Stirring by inventor(s) described in:

- ☐ The specification filed herewith.
☒ Application Serial No. 09/509,147, filed September 17, 1998
☐ Patent No. _____, issued _____.

If the rights held by the above-identified small business concern are not exclusive, each individual, concern, or organization having rights in the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 C.F.R. 1.9(d), or a nonprofit organization under 37 C.F.R. 1.9(e).

* NOTE: Separate verified statements are required from each named person, concern, or organization having rights to the invention averring to their status as small entities. (37 C.F.R. 1.27)

Name:
Address:

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

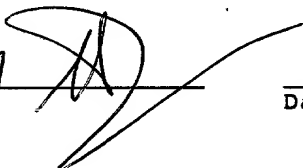
I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Name of Person Signing: Mark David Radley

Title In Organization: Director

Address of Person Signing: Shire Hill, Saffron Walden, Essex, CB11 3AZ.

Signature MARK DAVID RADLEY  Date 20/3/00

SMENTITY.SBC

IN THE UNITED STATES PATENT OFFICE

In re application of: Ladlow et al.)
Serial No:) Group Art Unit:
Filed:) Examiner:
For: PARALLEL REACTION STATION)
WITH MAGNETIC STIRRING) Attny Dkt No. 58937/123

PRELIMINARY AMENDMENT

Box PCT
Assistant Commissioner for Patents
Washington, D.C. 20231
Attn: RO/US

Sir:

A Preliminary Amendment of the claims in the above-captioned application is submitted herewith.

In the Claims:

4. (Amended) A device according to [any of] claim[s] 1 [to 3] wherein the fixing means comprise a plurality of sockets each designed to securely accommodate a reaction vessel.

6. (Amended) A device according to [any of] claim[s] 1 [to 5] wherein the device incorporates a condenser unit.

8. (Amended) A device according to [any preceding] claim 1 wherein the adapter block is circular in shape.

9. (Amended) A device according to [any preceding] claim 1 wherein the adapter block is made of chemically resistant material.

10. (Amended) A device according to [any preceding] claim 1 wherein the adapter block incorporates a gas manifold.

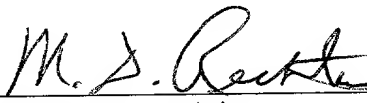
REMARKS

Please enter the above preliminary amendment of the claims.

The Commissioner is authorized to charge any deficiency in fees or credit any overpayment to Deposit Account No. 06-1450.

Respectfully submitted,

Dated: 17 March 2008


Michael D. Rechten
Reg. No. 30,128

FOLEY & LARDNER
One IBM Plaza
330 North Wabash Avenue, Suite 3300
Chicago, Illinois 60611
(312) 755-1900

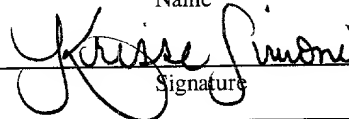
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Date of Deposit: 3/17/08

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Krisse Simoni

Name


Signature

PARALLEL REACTION STATION WITH MAGNETIC STIRRING

The present invention relates to a device capable of accommodating a plurality of reaction vessels being specifically adapted so that when placed in a magnetic field, such as that generated by a laboratory magnetic stirrer, any reaction vessel accommodated by the device is in an effective position for stirring with respect to the magnetic field.

In the field of organic chemistry it is often desirable to perform a variety of related chemical reactions simultaneously under similar reacting conditions. The technique for performing such reactions simultaneously is known as parallel synthesis.

One of the problems associated with carrying out parallel syntheses in the laboratory is that the majority of existing laboratory magnetic stirrers are only designed to accommodate and efficiently stir the contents of one reaction vessel at any one time. Accordingly, such equipment is not suitable for use in parallel synthesis.

Laboratory magnetic stirrers specifically designed for use in parallel synthesis are known. However, such apparatus, conventionally known as parallel reaction stations are only available as complete units incorporating a source of magnetic flux together with a frame for accommodating reaction vessels. These units are very costly in comparison to laboratory magnetic stirrers. The present device is advantageous over known devices in that it allows a conventional magnetic stirrer to be used for parallel synthesis and hence provides significant economic advantages compared with parallel reaction stations.

A means has now been found which permits the use of existing laboratory magnetic stirrers in parallel syntheses by providing a device which is capable of securely accommodating a plurality of reaction vessels said device being specifically adapted so that when correctly located within a magnetic field generated by a laboratory magnetic stirrer each and every reaction vessel is effectively positioned for stirring with respect to the magnetic field. Thereby, any

reaction vessel, placed in the device and equipped with a magnetic stir bar, is subject to smooth and efficient agitation.

Thus, the present invention provides a device comprising an adapter block, the adapter block containing fixing means for holding a plurality of reaction vessels, wherein when the adapter block is co-operatively positioned within a magnetic field generated by a laboratory magnetic stirrer each and every position for holding a reaction vessel is effectively located for stirring with respect to the magnetic field. Preferably, the fixing means will comprise a plurality of sockets each designed to securely accommodate a reaction vessel.

Optionally the device may incorporate guide means which engage with the laboratory magnetic stirrer thereby ensuring the adapter block is correctly located within the magnetic field of the laboratory magnetic stirrer such that each and every position for holding a reaction vessel is effectively located for stirring with respect to the magnetic field. Suitably the guide means will ensure the adapter block is effectively positioned such that each and every position for holding a reaction vessel is effectively located for equivalent stirring with respect to the magnetic field. Preferably, the guide means comprises a raised rim around a central recess.

The adapter block may be cast in any suitable form, however in a particularly preferred arrangement the adapter block is circular in shape. The adapter block may be used in co-operation with any laboratory magnetic stirrer with a suitable circular magnetic/hotplate. Preferred laboratory stirrers include the IKA RCT basic hotplate stirrers, the IKAMAG REO, the Heidolph MR3001, the Heidolph MR3002, and the Heidolph MR3000.

The sockets for securely accommodating the reaction vessels may be located at any position on the device in which they are effectively positioned for stirring with respect to the magnetic field. In a particularly preferred arrangement the sockets are arranged about the perimeter of the adapter block.

Preferably the adapter block is made of chemically resistant material for example PTFE or a metal such as aluminium or stainless steel.

The adapter block may optionally be constructed from heat conducting material for example aluminium or stainless steel. Thereby, when the device is used in co-operation with a hotplate/magnetic stirrer heat generated by the hotplate will be efficiently transferred to the reaction vessels accommodated by the device.

Preferably the adapter block or condenser unit will incorporate a gas manifold. Thereby, gas flow or vacuum supply to each of the reaction vessels may be individually controlled. The gas manifold may be located anywhere on the device, however in a particularly preferred arrangement the gas manifold is located at the centre of the parallel reaction station.

The adapter block is capable of being constructed to accommodate any size laboratory reaction vessel however 16 and 24 mm o.d. test tubes are particularly preferred.

Optionally the device may incorporate a condenser unit such that the contents of the reaction vessels may be heated to reflux. Suitably, the condenser unit will be assembled such that the unit is in direct contact with the reaction vessels as they project from the adapter block. Preferably the condenser unit will be constructed from a material of high specific heat capacity for example stainless steel. In a particularly preferred embodiment the unit is condenser liquid cooled.

Preferred embodiments of the invention are described in detail below, by example only, with reference to the accompanying drawings, wherein:

Figure 1 is a perspective view of the adapter block working in co-operation with a laboratory magnetic stirrer.

Figure 2 is a plan view of the adapter block.

Figure 3 is a cross-section of the adapter block.

Figure 4 is a perspective view of the adapter block together with a condenser unit working in co-operation with a laboratory magnetic stirrer.

Figure 5 is a plan view of the condenser unit.

Figure 6 is a cross-section of the condenser unit along line A.

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The device illustrated in Figure 1 comprises the adapter block (1) which is constructed from PTFE and is circular in shape with sockets (2) suitable for securely accommodating the test tube reaction vessels (3) located about the perimeter of the device. One face of the device is equipped with a central recess whereby the stirrer plate of the magnetic stirrer (5) is secured within the recess thereby ensuring that the device is effectively located for stirring within the magnetic field. A gas manifold comprising a gas inlet (4) and gas outlets (4a) is located at the centre of the adapter block.

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Figures 2 and 3 show the location of the gas inlet (4) and gas outlets (4a) more clearly. Figure 3 illustrates the central recess (5a) formed by the raised rim (5b) which ensure the adapter block is correctly located within the magnetic field of the laboratory stirrer.

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The device shown in Figure 3 comprises an adapter block (11) and a condenser unit (12) both of which are constructed from aluminium and are circular in shape. The adapter block comprises sockets (13) located about the perimeter of the device suitable for accommodating the test tube reaction vessels (14). The condenser unit contains openings (15) through which the test tube reaction vessels pass. The condenser unit is equipped with inlet/outlets (18) which permit cooling fluid to flow through the condenser unit. The adapter block and condenser unit are substantially parallel to one another. One face of the adapter block is equipped with a recess whereby the hotplate of a hotplate/magnetic stirrer (16) may be secured within the recess thereby ensuring that the adapter block is effectively located within the magnetic field. A gas manifold comprising a gas inlet (17) and gas outlets (17a) is located at the centre of the condenser unit.

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Figures 5 and 6 illustrate more clearly the cooling fluid inlet/outlets (18) the openings through the reaction vessels pass (15) and the gas inlet (17) and the gas outlets (17a).

- 5 In an additional embodiment of the invention the device comprises an adapter block as described hereinbefore wherein the device is permanently fixed to a laboratory magnetic or hotplate magnetic stirrer.

CLAIMS

1. A device comprising an adapter block, the adapter block containing fixing means for holding a plurality of reaction vessels, wherein when the adapter block is co-operatively positioned within a magnetic field generated by a laboratory magnetic stirrer each and every position for holding a reaction vessel is effectively located for stirring with respect to the magnetic field.
2. A device according to claim 1 wherein the adapter block incorporates guide means to ensure that the device is effectively positioned with respect to the laboratory magnetic stirrer's magnetic field.
3. A device according to claim 2 wherein the adapter block incorporates guide means to ensure that each and every position for holding a reaction vessel is effectively located for equivalent stirring.
4. A device according to any of claims 1 to 3 wherein the fixing means comprise a plurality of sockets each designed to securely accommodate a reaction vessel.
5. A device according to claim 4 wherein the sockets are arranged about the perimeter of the adapter block.
6. A device according to any of claims 1 to 5 wherein the device incorporates a condenser unit.
7. A device according to claim 6 wherein the adapter block is made of heat conducting material.
8. A device according to any preceding claim wherein the adapter block is circular in shape.
9. A device according to any preceding claim wherein the adapter block is made of chemically resistant material.

10. A device according to any preceding claim wherein the adapter block incorporates a gas manifold.
- 5 11. A magnetic or hotplate magnetic stirrer securely fitted with an adapter block wherein the adapter block contains fixing means for holding a plurality of reaction vessels, and wherein the adapter block is positioned within the magnetic field generated by the laboratory hotplate magnetic stirrer such that each and every socket is effectively positioned for stirring with respect to the magnetic field.
- 10 12. A magnetic or hotplate magnetic stirrer according to claim 11 wherein the device incorporates a condenser unit.

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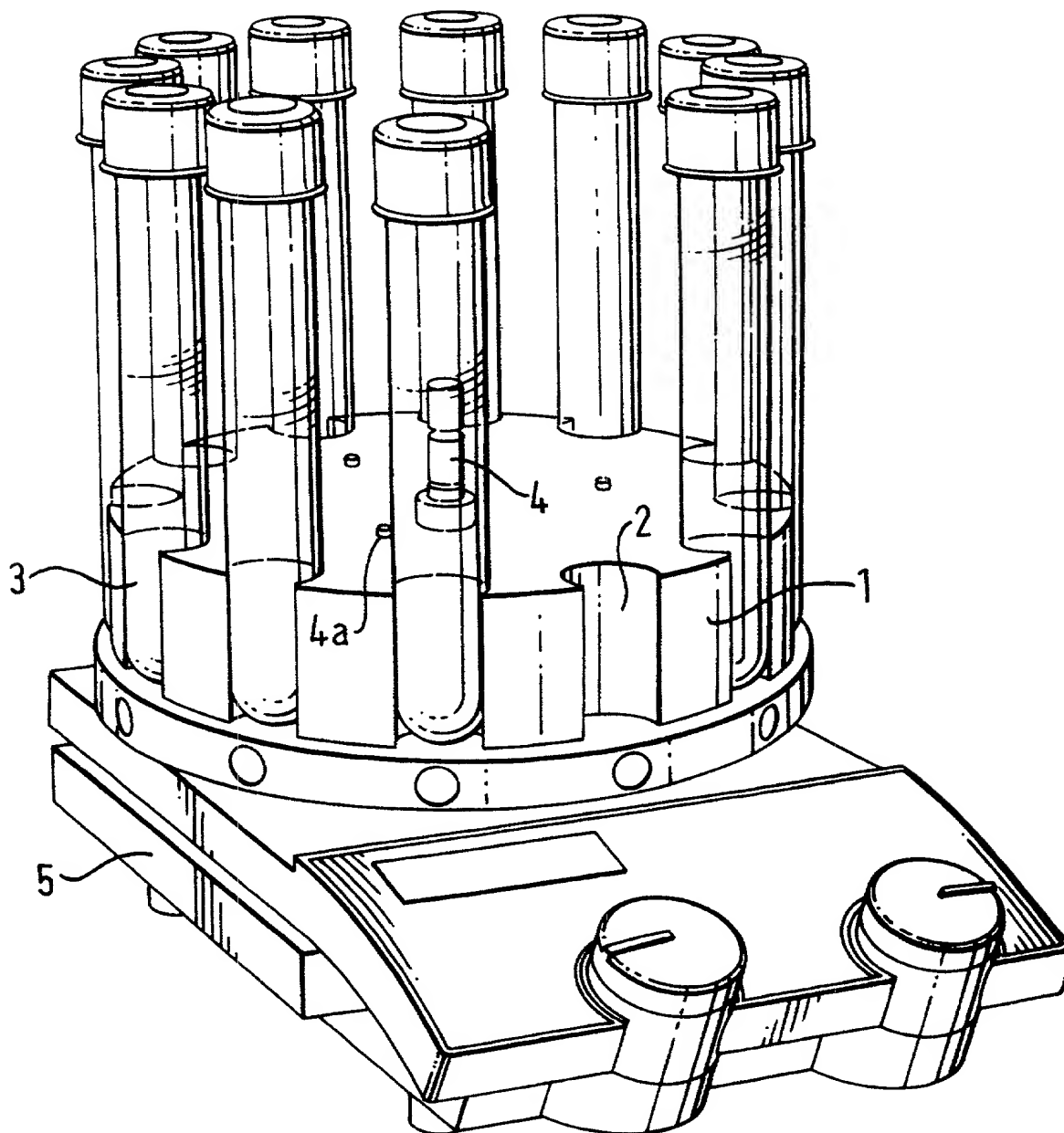


FIG. 1

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FIG. 2

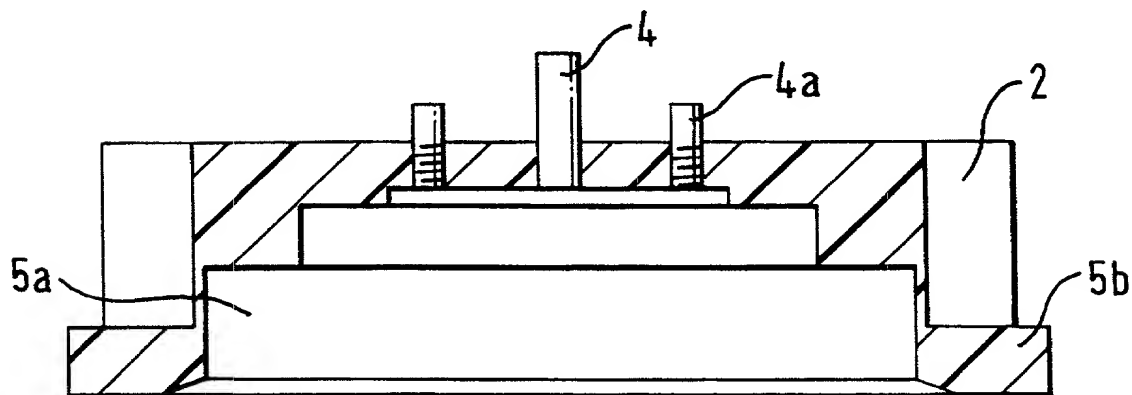
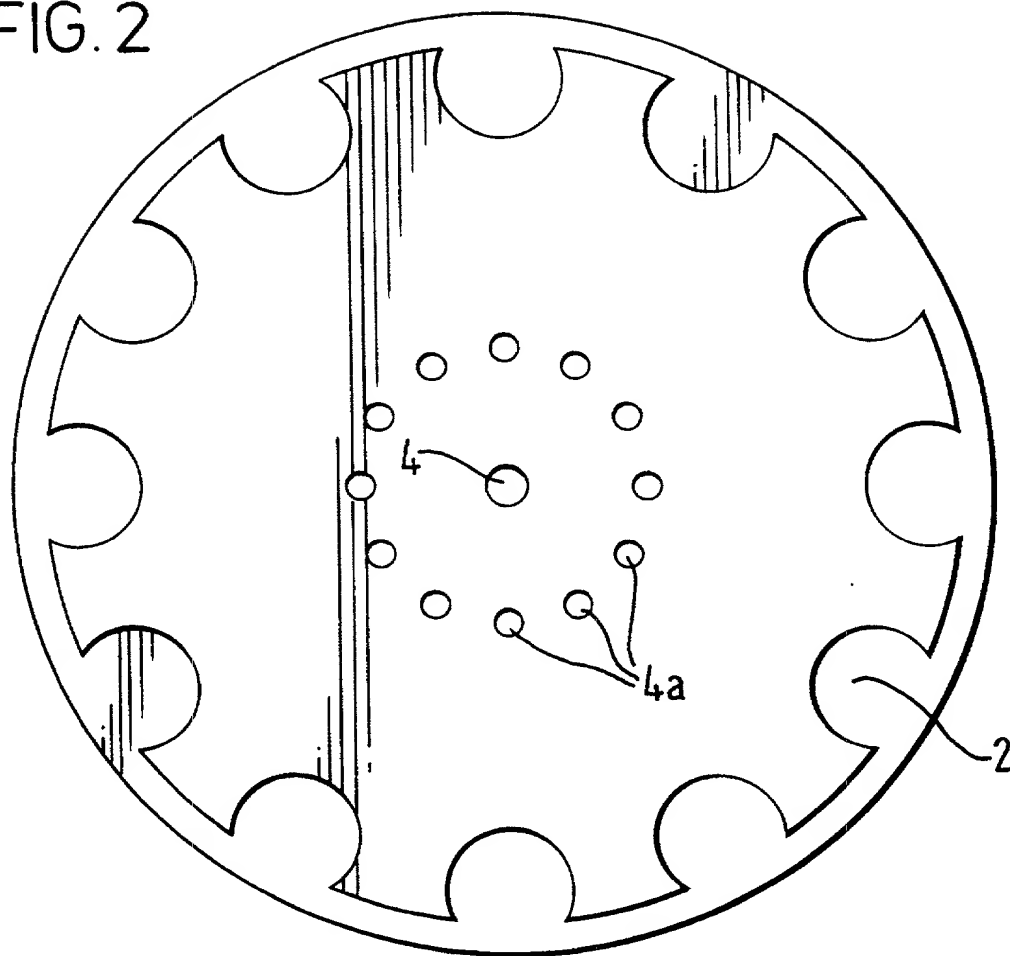


FIG. 3

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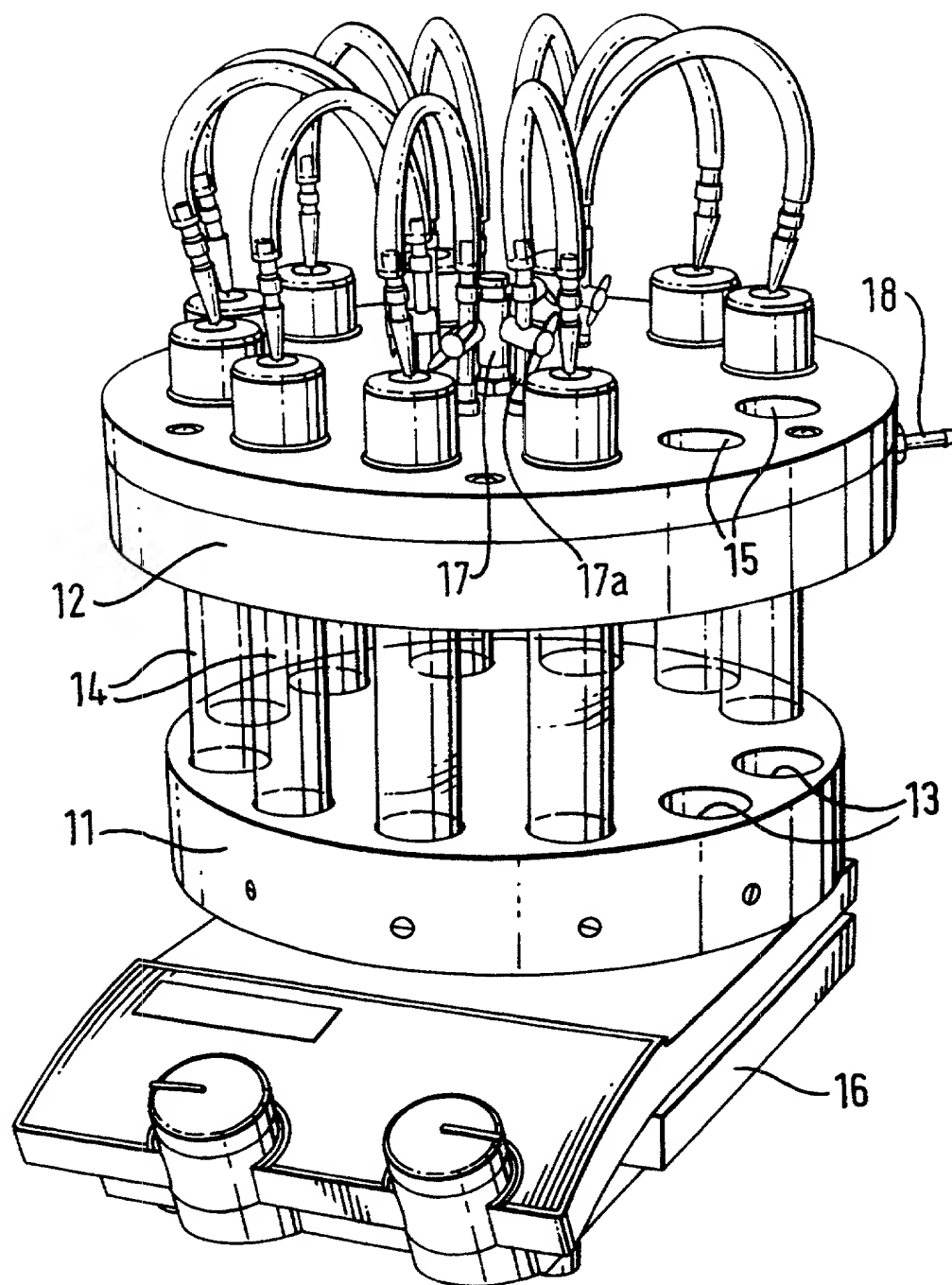


FIG. 4

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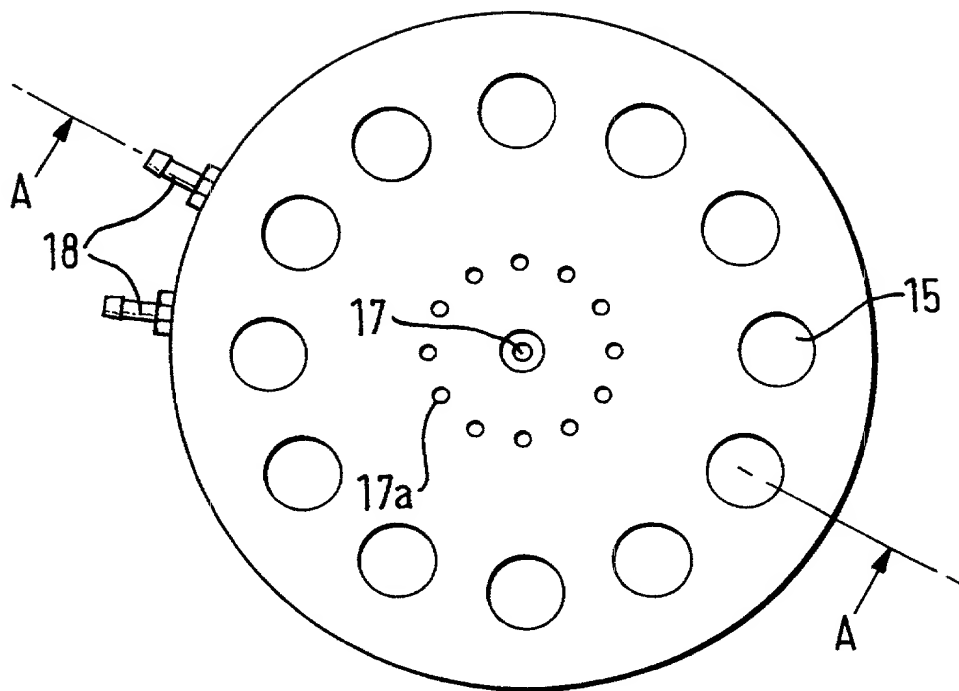


FIG. 5

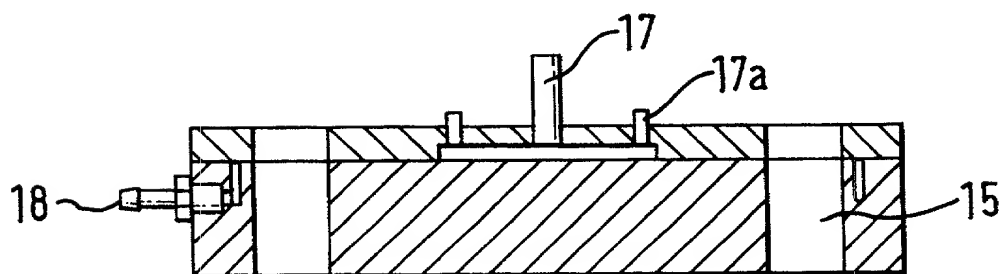


FIG. 6

005250 24760560

INVENTORS' DECLARATION

(Multiple Inventors)

As a below named inventors, we declare that:

Our residences, post office address and citizenship are as stated below next to our names; that we believe we are the original, first and joint inventors of the subject matter which is claimed and for which a patent is sought on the invention or design entitled **PARALLEL REACTION STATIONS WITH MAGNETIC STIRRING**, the specification of which:

 is attached hereto; or
 X was filed in the United States on Sept. 17, 1998 as Application Serial
 No. 09/509,147;

that we have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above; and that we acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to us to be material to patentability as defined in 37 C.F.R. § 1.56.

We hereby claim foreign priority benefits under 35 U.S.C. § 119 or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application having a filing date before that of the application to which priority is claimed:

<u>Number</u>	<u>Country</u>	<u>Date Filed</u>	<u>Priority Claimed</u>
PCT/EP98/05901	PCT	September 17, 1998	September 18, 1997
GB9719774.3	Great Britain	September 18, 1997	September 18, 1997

We hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or under § 365(c) of any PCT international application designating the United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT application(s) in the manner provided by the first paragraph of 35 U.S.C. § 112, we acknowledge the duty to disclose material information as defined in 37 C.F.R. §1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below:

(Application Serial Number)

(Date Filed)

(Application Serial Number)

(Date Filed)

(Application Serial Number)

(Date Filed)

We acknowledge that attorneys and agents of the law firm of Foley & Lardner will be appointed by the assignee of this application to represent its interests herein, and that said attorneys and agents do not represent any of us or our legal interests.

We declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Inventor's Signature:

Date:

Inventor's Name (Typed):

Mark		Ladlow
First	Middle Initial	Family Name

Citizenship:

Residence (City):

(State/Foreign Country):

Post Office Address:

Great Britain
Cambridge
Great Britain *GBN*
University Chemical Laboratory, Lensfield Road
Cambridge, Great Britain CB2 1EW

Inventor's Signature:

Date:

Inventor's Name (Typed):

First	Middle Initial	Family Name
Adrian	Walter	Mitchell

Citizenship:

Residence (City):

(State/Foreign Country):

Post Office Address:

Great Britain
Hertfordshire
Great Britain GBN
Park Road, Ware
Hertfordshire, Great Britain SG12 0DP

INVENTORS' DECLARATION

(Multiple Inventors)

As a below named inventors, we declare that:

Our residences, post office address and citizenship are as stated below next to our names; that we believe we are the original, first and joint inventors of the subject matter which is claimed and for which a patent is sought on the invention or design entitled PARALLEL REACTION STATIONS WITH MAGNETIC STIRRING, the specification of which:

_____ is attached hereto; or
X was filed in the United States on Sept. 17, 1998 as Application Serial
No. 09/509,147;

that we have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above; and that we acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to us to be material to patentability as defined in 37 C.F.R. § 1.56.

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<u>Number</u>	<u>Country</u>	<u>Date Filed</u>	<u>Priority Claimed</u>
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GB9719774.3	Great Britain	September 18, 1997	September 18, 1997

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Application Serial Number

Date Filed

Status

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional applications(s) listed below:

(Application Serial Number)

(Date Filed)

(Application Serial Number)

(Date Filed)

(Application Serial Number)

(Date Filed)

We acknowledge that attorneys and agents of the law firm of Foley & Lardner will be appointed by the assignee of this application to represent its interests herein, and that said attorneys and agents do not represent any of us or our legal interests.

We declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Inventor's Signature: _____

Date: _____

Inventor's Name (Typed):

Mark

Ladlow

First

Middle Initial

Family Name

Citizenship:

Great Britain

Residence (City):

Cambridge

(State/Foreign Country):

Great Britain

Post Office Address:

University Chemical Laboratory, Lensfield Road

Cambridge, Great Britain CB2 1EW

Inventor's Signature: _____

Date: _____

Inventor's Name (Typed):

Adrian

Walter

Mitchell

First

Middle Initial

Family Name

Citizenship:

Great Britain

Residence (City):

Hertfordshire

(State/Foreign Country):

Great Britain

Post Office Address:

Park Road, Ware

Hertfordshire, Great Britain SG12 0DP